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**“An Evaluation of Food Commodity Procurement
Strategies: Insights from Case Studies”**

Plan B Research Paper for Master’s of Science Degree

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Chapter 1 Introduction

Background

The United States food industry is a very dynamic industry that is ever changing and faces significant competition. Consumers primarily drive these changes. Over the past decade, consumer demographics have changed dramatically. These changes include more single people households, more single parent households, more ethnic diversity, and income growth. These changes have created new markets including global, ethnic, organic, and convenience foods for time starved consumers. In order to respond to consumer change, there has been tremendous growth in new product development among food manufacturers. As more new products are being introduced, food manufacturers are forced to focus on profitability of these new products. One method for maintaining and growing profitability is reducing cost of the inputs that are used in these new products.

Given the focus on cost containment, as well as a need for global focus of procurement, strategic procurement has taken a more important role for food manufacturers. Global focus of commodity procurement refers to food manufacturers' increased procurement of commodities from outside their country. Procurement is one of the most basic components of a food manufacturer's activities. The main job of the procurement department is to provide the raw materials necessary for food production.

Within the procurement departments of a food manufacturer, there are usually two types of procurement, commodity and non-commodity. An example of a commodity product is number two yellow corn, while an example of a non-commodity product is marinated chicken breast, a value-added product. Non-commodity items, by definition, are not standard items. Non-commodity products vary by several characteristics including

having value-added attributes and quality differences. Commodity products, on the other hand, meet broadly defined standards for product attributes and quality. Commodity products however are not differentiated by the product attributes or quality. The commodity buyers are not trying to differentiate their product by quality. It should be pointed out that the focus of this study is commodity procurement.

Non-commodity procurement costs are large for manufacturing firms. Much of the literature focuses on non-commodity procurement because of these large costs and the many ways these products are procured. Given that non-commodity procurement is usually contract based and can include highly specific requirements, non-commodity procurement has been the focus of more attention within procurement departments and in academic literature.

Commodity procurement also has many unique characteristics that separate it from non-commodity procurement. In dealing with commodities, buyers face not only the supply risk of not having enough supply to meet demand, but also face price risk because of buying commodities from volatile markets. In contrast, most non-commodity products are bought via contracts, many of which include the price. Non-commodity buyers also try to contain cost, but commodity procurement departments have the added need to deal with volatile markets with rising and falling prices.

Statement of Problem

Commodity procurement departments are often overlooked in the academic literature, as it is assumed that the basic commodities that are needed for manufacturing will, in fact, be at the manufacturing plant when needed. This research will provide a first step toward filling the gap in the procurement literature with respect to commodity

procurement strategies. The overall goal of the research is to use the knowledge gained to improve commodity procurement strategies in the food industry. The objective of this research is to provide an empirical study of commodity procurement for food manufacturers, examining what procurement strategies are used and how characteristics of these commodities affect the choice of commodity procurement strategy.

Objective of Research

There are several objectives of this research. The first objective is to discover the different commodity procurement strategies being used by food manufacturers. The next objective is to identify what product and service characteristics influence the choice of commodity procurement strategy. Another objective is to determine which strategy, based on the presence of these characteristics, a food manufacturer selects for procuring various commodities. Another objective of this research is to discover trends and opportunities connected with the different commodity procurement strategies. The final objective of this study is to determine if food manufacturers use specific commodity procurement strategies as a way to respond to economic pressures for cost containment.

Significance of Problem

Commodity procurement departments play a critical role in supplying materials to the manufacturing plant, also being a very important piece of the food manufacturer's strategic plan. A good commodity procurement department that is part of a food manufacturer's strategic plan can provide many benefits to the company as a whole. The most obvious is that a good commodity procurement department can save the company a significant amount of money. This can be accomplished by (1) buying commodities at reduced prices, (2) improved timing of purchases to increase plant efficiency, or (3)

improved logistics between the manufacturer and its supplier. As the food manufacturing business continues to be more price competitive, many food-manufacturing firms are facing a very serious price squeeze. With a better understanding of the procurement of commodities, food manufacturers can ease the pressure of this price squeeze by having a more efficient commodity procurement department.

Scope of Research

This research examines commodity procurement strategies among food manufacturers. The research was conducted with interviews with multiple commodity buyers from three food manufacturers. There were a total of twelve commodity procurement personal interviewed. This research examined multiple commodity buying situations within each of the participating firms.

Methodology

The research method used for this study is a case study. When a researcher is determining what method to use for a particular study the following three basic factors come into consideration: the type of research question, the control the researcher has over events, and the degree the study is focused on contemporary events as opposed to historical events (Yin 1989). Once these factors are considered, the researcher must decide between several research methods, including experiments, surveys, archive analysis, historical analysis, and case studies (Yin 1989).

The research question of “What” can be analyzed using any of the previously mentioned methods. However, when exploring “Why” questions, the appropriate methods are case studies, histories, and experiments (Yin 1989). With case studies and historical studies the researcher has no control over the outcome (Yin 1989). For this

research, both “what” and “why” questions are relevant. As stated in the objectives, this research looks at the question of what procurement strategies are used and why these strategies are used. Since the researcher had no control over the outcome, case study methodology is the most appropriate.

Historical analysis might have been appropriate but would have required the food manufacturers to disclose historical purchases and this information is considered confidential and would have precluded involvement. Also, the case study is useful when the researcher wants to look at dynamic changes (Yin 1989). This research was examining the changes that have occurred in the past five years and seeking to determine where commodity procurement may change in the next five years.

Discussion of Case Method

The first step of the research included a thorough literature review. This review examined the typical procurement strategies used for commodity purchases, as well as product characteristics that affect strategy choice. Typical commodity strategies include buying on the spot market, using futures to establish price, and making a forward buy. The final two strategies often are included in some form of formula pricing (Arthur 1971).

There is a large literature available for the agriculture producers about selling or marketing agricultural commodities, but little literature exists for the flip side of the equation (i.e., for food manufacturers purchasing these raw agricultural commodities). The main instruments that will be examined in this study are buying on the spot market and forward buys. Buying on the spot market means buying commodities at the market price when needed for manufacturing and involves no advanced pricing mechanism.

Forward buys mean the food manufacturer makes the commodity purchase in advance of manufacturing needs and stores the commodity (either by supplier or manufacturer) until it is manufactured into the final product. Forward buys include forward contracts specifying future delivery of a commodity. The spectrum of these strategies or instruments is presented in figure 1.

In the next step, a list of commodity characteristics that affect procurement strategies was developed. This list was compiled by reviewing literature on general procurement strategies, as well as by discussing procurement strategies with food industry professionals prior to conducting the case studies. These characteristics are presented in table 1.

The next step consisted of developing a matrix of the expected affect that each characteristic would have on strategic choice. This matrix was developed based on previous literature, economic theory, and procurement theory. These expectations were presented in table 2.

Sample Selection

Food manufacturers were contacted for their willingness to participate as potential interviewees for the study. Requirements for participation included involvement in food commodity procurement as well as the use of multiple strategies across different agricultural commodities. After contacting many companies, several were selected to participate in the research interviews. Interviews were conducted on-site at the firms' facilities with two companies. Each interview required approximately one day on site. A third company was interviewed over the phone. There were twelve interviews conducted for this research.

Data Collection Procedures

Through preliminary telephone interviews and consultation with professionals in the agricultural commodity procurement industry, the questionnaire in Appendix 1 was developed. This questionnaire was pre-tested on general academic and industry experts. Interview participants included agricultural commodity buyers, as well as managers in the commodity procurement department, at each participating food manufacturer. All personnel that were interviewed were asked the entire questionnaire.

Analysis

Once interviews were complete, survey results were then compared with the hypothesized behaviors in table 2. The number of interview participants that considered a certain characteristic when forming commodity procurement strategy and to what degree the characteristic impacted their decision was assessed. These results were then compared with the hypothesized expectations.

Many participant responses confirmed the hypothesized expectations. However, more interestingly, several responses differed from initial hypothesized expectations. This study examines and explains these similarities and differences.

Organization of Paper

The second chapter of this research examines the current literature base for commodity procurement strategies. This review will include literature on the different strategies and the characteristics of the commodities that are studied in this research. Then the empirical results will be presented for each characteristic that was studied. This

paper will conclude with a discussion of the results, implications of these results, and a discussion of future research possibilities in the commodity procurement area.

Chapter 2 Literature Review

Background

The first and most basic function of the commodity procurement department within food manufacturers is to maintain the supply of commodities to the manufacturing plant in order to meet manufacturing demands. A commodity is defined as: “widely traded raw materials and agricultural products such as wheat corn, and rice” (Seitz 1994 pg. 435). These commodities have general quality standards that must be met in order to be classified in a certain category of commodity (Seitz 1994). Within a commodity category, a commodity is not differentiated by quality. This is contrasted with non-commodity procurement, which would focus on product differentiation.

The commodity procurement department must consider several issues regarding maintaining supply. According to Kingsman (1985), there are five key factors involved in maintaining and/or determining the level of supply. First, future quantity requirements of the commodity must be determined and subtracted from supplies already in inventory or ordered. Second, future requirements must be converted into a schedule of future purchases, specifying the timing and the size of the commodity purchase. Third, financial and operational constraints must be considered to determine the minimum and maximum lead-times needed for manufacturing. This helps determine what forward pricing mechanisms, if any, can be used. Fourth, while conforming to constraints of the buying time period, the department determines the timing for actual buys. These two time periods can be exactly the same, or if accurate price forecasts are available, purchases can take place in different time periods to take advantage of price swings. Fifth, buying strategies for each commodity must be developed and connected to scheduled orders with

appropriate on time deliveries that allow efficiency at the manufacturing plant (Kingsman, 1985).

The second function of a commodity procurement department is to minimize the cost of commodities that are used as inputs into finished products. Theoretically, a firm is expected to minimize the per-unit cost of inputs in order to maximize profits; this is the expected behavior required in order for a food manufacturer to survive in a perfectly competitive environment (Hayenga 1979).

The Procurement Options

Once a commodity buyer evaluates the volume needed and the different cost for each strategy, then the appropriate strategy for each commodity is chosen. There are three strategies available for commodity procurement: the spot market, using futures, and the forward buy (figure 1). The optimal strategy depends on a variety of factors. For example, perishable items have limited shelf life and, thus, must be procured in a way to ensure freshness. Other commodities offer more flexibility regarding strategy. Each strategy will be examined below.

Spot Market

The traditional commodity procurement instrument is the spot or cash market. The spot market is defined as buying the commodity on the cash market and immediately taking possession. When using the cash market, food manufacturers have no direct contract with a supplier. Rather, they buy from whichever supplier has the lowest cash price at the time when the food manufacturer wants to take possession of the commodity. This method involves the food manufacturer making purchases of a certain commodity

when inventory drops to a determined threshold level. There are several reasons why this is a widely used strategy.

The first reason is that it involves no development of strategies or market analysis; rather it merely involves monitoring current supply and reordering (Arthur 1971). Another advantage of buying on the spot market is that it minimizes inventory cost, because there is no storage of commodities purchased in advance of manufacturing (Arthur 1971).

The spot market is a very applicable tool when there is (1) very little price movement and, hence, little risk of price fluctuation or (2) when price movement cannot be predicted and, hence, a strategy cannot be implemented to minimize or reduce the high risk of unpredictable prices. For many agricultural goods, there are no functioning futures markets. This leaves the spot market and forward buys as the main strategies used to procure commodities.

While there are many cases where the spot market is a viable procurement instrument there are disadvantages to using the spot market exclusively for a commodity. There is the inherent risk of not being able to procure enough volume when needed, thus leading to inefficiencies in manufacturing (Arthur 1971).

Since another function of a procurement department is to minimize input cost, using only the spot market may eliminate opportunities to purchase commodities at lower prices. This is an additional disadvantage of using the spot market. If the spot market is used, the price is determined solely by the timing of the need for more input. If other procurement instruments are used, a procurement department can take advantage of low

commodity market price swings to decrease cost over time by purchasing more of a commodity when price is low and relatively less when prices are high.

Futures

Another procurement instrument that commodity procurement departments use is trading futures. A futures contract is an obligation to buy or sell a given quantity and standard quality of a commodity at a designated future time.

The main way that futures are used is to hedge a cash purchase that will take place in the future (Bittman 2001). Essentially, a hedge is a food manufacturer taking opposite positions in the same commodity market, i.e. buying (long in the market) in the cash market and selling (short in the market) in the futures market or vice versa. A hedge is used when price forecasts indicate that prices will be increasing, this is because a hedge will essentially “lock-in” the current market price (Bittman 2001). Bittman (2001) explains the theory of the food manufacturer hedging by using futures contracts. Since a food manufacturer needs to buy commodities to keep its manufacturing plants running, they are inherently short in the cash market, because food manufacturers are committed to buying in the cash market at some future time, so at the present time food manufacturers are essentially selling (short) in the cash market (Bittman 2001). Since a food manufacturer must buy on the spot market in a future time period they want to protect against commodity prices increasing. They do this by buying a futures contract in the current time period that expires when the commodity will be purchased on the spot market. When the physical commodity is purchased on the cash market, the food manufacturer will then sell the futures contract they bought earlier (Bittman 2001).

Assuming that cash and futures markets move in the same direction, food manufacturers can essentially “lock-in” the cost.

This is demonstrated by the example of prices increasing as expected. While the cash cost of the commodity increases, the food manufacturer makes a profit by buying the futures contract at a lower price and selling it at a higher price. The amount of the cash price increase is equal to the profit on the futures trade; therefore the net price is the market price when the hedge was activated (Bittman 2001).

Forward Buy

A natural extension of spot market buying is to forward purchase in the spot market; buying higher volumes when prices are lower, and lower volumes when prices are high. A forward buy is defined when a food manufacturer purchases and takes possession of a commodity in advance of manufacturing needs. As Hayenga (1979) discusses, food manufacturers are then able to establish their per-unit commodity price, and thus set the price of the final goods and capture desired profit margins (Hayenga 1979).

For food manufacturers it is an advantage to establish the per-unit commodity cost on anticipated volume required of a commodity by advanced purchase and storage of that commodity at an earlier time period (Hayenga 1979). If the cost saving on the commodity is greater than the storage cost, an advance purchase then results (Hayenga 1979). Hayenga (1979, p. 351) summarizes the concept of forward purchasing very well when he says, “The timing of commodity purchases has a significant influence on a firm’s costs.”

A disadvantage of a forward buy is that there is price risk. There is a chance that the commodity price could decrease and the food manufacturer could pay more than the market price at time of manufacturing. For example, suppose a food manufacturer purchases a large quantity of wheat in July, when price are projected to be low, for manufacturing later in the year. After the purchase is made, there is an unexpected increase of supply on the market so the price of wheat decreases even further. The result of this scenario is the food manufacturer pays a higher price for the commodity by using a forward buy, as compared to what the price would have been on the cash market.

Variations exist on forward buys that focus on who takes physical possession of the commodity at the time of purchase. This is a major consideration for a food manufacturer with limited storage space is available for them to use (Kingsman 1985). If a food manufacturer must take possession, there is an added cost and a disadvantage of requiring storage space. If storage is limited, a major advantage ensues when the supplier retains possession until the manufacturer requests delivery. A final component of forward buy are forward contracts. A forward contract is a contract that a food manufacturer has with a supplier that specifies delivery of a commodity at a certain future date.

This study included participants that were primarily focus on specialized commodities. Specialized commodities are commodities for which there is no futures market. Thus, this study will focus on specialized commodities. For this reason, there will be no further discussion of the futures market as a procurement strategy and the only strategies examined will be spot market and forward buy.

Transaction Cost

The commodity procurement decisions that are discussed in this study are supported theoretically. A particular procurement decision can be explained by using Williamson's transaction cost theory (1973, 1975). Williamson (1973) argues that economic organizations are mostly explained by human attributes and transactional factors. Human attributes of bounded rationality and opportunism exists, therefore coordination among entities will not automatically arise. Williamson defines bounded rationality as "rate and storage limits on the capacity of individuals to retrieve, and process information without error" (1973 pg 317). While he defines opportunism as "an effort to realize individual gains through a lack of candor or honesty in transactions" (1973 pg 317). Williamson (1973) argues that coordination will not exist because actors in the market will seek to maximize their profit opportunities. Further, some actors will produce too much or too little causing uncertainty in the market. These market conditions are central to all the commodity procurement decisions discussed in this study. The food manufacturers will enter a forward buy for one of two reasons (1) seeking profit opportunities or (2) to minimize risk of not insuring supply due to other actors in the market providing too little of a commodity.

Williamson (1973) also explains that there are transactional factors that affect the market, including uncertainly, small numbers, and information asymmetry. Each of these transactional factors has a cost associated with it. Williamson (1975) explains that as transaction costs increase, firms will seek to move away from the open market in order to minimize their risk. For example, if there is high uncertainty of supply a firm will move away from the spot market to reduce their risk of maintaining supply. In this case,

forward buy is a useful option because it allows the firm to contract for the level of supply required and, thus, reduces the risks associated with higher transaction costs. The transactional factors mentioned by Williamson play a role in all of the commodity procurement decisions in this study.

The coordination of the two parties involved in the commodity exchange is best described by “The Vertical Coordination Continuum” (Peterson and Wysocki 1998 pg 4). The five stages of the continuum are spot market, specification contract, strategic alliance, formal cooperation, and vertical integration. The main differentiating factor between the five stages is the intensity of control. As a transaction moves from the spot market to complete vertical integration, there is a higher intensity of control.

The commodity transactions involved in this study primarily fall in the first two categories (spot market and specifications contract). The spot market has a very low intensity of coordination of control. The only control that the commodity buyer has on the market is whether or not to make a purchase. After a purchase a commodity buyer has no obligation to participate in a future transaction in the market (Peterson and Wysocki 1998). Specification contracts (part of forward buying strategies) have increased coordination control through negotiating terms of the contract. The biggest difference between the specification contract and the spot market is that the spot market is that the specifications contract has legally enforceable specifications that are written in to the contract (Peterson and Wysocki 1998).

However, there are certainly cases where the other categories come into play. For example, one of the firms in this study was a cooperative. Since the firm’s strategy does

not require high levels of control, ultimately leading to vertical integration, these firms did not need to be completely vertically integrated to be a competitive food manufacturer.

Choosing Among the Strategies

After reviewing the literature, there are very good explanations of the different strategies that are used to procure commodities and what is the best way to implement these different strategies. This paper seeks to determine how characteristics of an agricultural commodity tend to lead a commodity to be procured via one of these strategies versus another strategy. Where the literature does a good job of describing how to execute these different strategies, this paper will attempt to explain why one of these strategies is preferred to the other ones due to the characteristics of the commodity that is being procured.

The previous discussion defined the main strategies available for commodity purchases. In order to select the optimal strategy, various factors must be considered. Factors that affect the choice of optional strategy are explored in this paper. The following will review the characteristics that are being examined by defining them and explaining how they are expected to affect the procurement strategy that is implemented.

Price Risk

Price risk refers to volatility, which is how much the price of the agricultural commodity varies over time. The volatility is measured in percentage terms and annualized to evaluate the historical volatility of a commodity (Bittman 2001). For example, if a commodity varies from \$1 to \$1.10 over a year, it has an annual volatility of 10%. The time frame over which this volatility is measured varies with each commodity.

High price risk commodities are those with high volatility, while low price risk commodities have a relatively consistent price. If the agricultural commodity price is relatively volatile, it is expected that the food manufacturer will implement a risk management instrument in the form of an advanced pricing mechanism, such as a forward buy. This is because if no advanced price mechanism is used there is a high risk of paying a significantly higher price at a later date when the agricultural commodity is bought on the spot market. If there is little price risk, there is often little reason for a commodity procurement department to spend time to develop an alternative buying strategy because the price is relatively stable. As such, when risk is low, it is likely that the buying strategy used is the spot market.

Volume

Volume is the amount of a commodity needed within a given time frame to fulfill manufacturing requirements for finished products. A high volume agricultural commodity requires a large quantity to be procured in a given time interval. On the other hand, low volume commodities do not require large quantities to be procured in order to maintain the manufacturing facility.

It is expected that the food manufacturer would seek some type of advanced pricing mechanism for high volume commodities. For high volume commodities, the risk of not having the required volume at the manufacturing facility at the appropriate time has a high cost. If the food manufacturer runs out of a high volume commodity this holds up manufacturing of final products and incurs significant cost (Kingsman 1985). For low volume commodities, it is more likely that a food manufacturer will buy the commodity on the spot market in order to save storage cost, all other variables held constant.

Perishability

Perishability refers to how long it takes before the commodity decays or spoils, so that it cannot be used in final products. Perishability plays a major role in commodity procurement strategies because perishability determines the amount of time that a commodity can be purchased in advance. A high degree of perishability refers to a commodity that has a relatively short time until it spoils.

It is expected that a food manufacturer would tend to not use the spot market with a commodity that is highly perishable. Essentially the transaction costs, as explained by Williamson (1975), are very high for perishable commodities. When the transactions costs increase, the food manufacturer will tend to move away from open markets (Williamson 1975). Because a highly perishable commodity cannot be stored long, a food manufacturer would also not want to make a forward buy that requires storage of a commodity. The risk of commodity spoilage and the costs associated with lost product is very high.

Therefore, with highly perishable commodities, it is likely that the food manufacturer will forward contract with a supplier to have a supply available when the commodity is fresh to attempt to minimize risk. A commodity that has low perishability has more forward buy options available.

Accuracy of Sales Forecast

Nearly all food manufacturers base their procurement volumes, at least to some extent, on the sales forecast of the final products produced from the commodity. The accuracy of the sales forecast refers to the degree to which forecast sales deviate from actual sales. Reid and Riegel (1989) found that in large foodservice firms, 53% of the

companies had the procurement department also handle the sales forecast activity. This study also noted that, in cases where another department did the sales forecast, procurement departments rated cooperation with the people who develop the sales forecast as very important to procurement success (Reid and Riegel 1989). A highly accurate sales forecast is a forecast volume is relatively close to the actual sales that occur.

It is expected that the higher the degree of accuracy of a sales forecast, the more the food manufacturer would participate in forward pricing activities. If sales forecasts are very accurate the volume risk is minimized, so a company can be more aggressive and focus on minimizing price risk. A food manufacturer is not as likely to use forward pricing on a product that has poor sales forecast accuracy, because there is a large probability that the company would end up with excess inventory or not enough supply of the commodity.

Special Promotions

Special promotions of final products also drive the procurement of commodities by food manufacturers. While most of these promotions are based at the retail level, the end result is a change in the procurement of a commodity, (e.g. a higher volume of commodity is needed to process the final product that is being promoted). Special promotions also put price pressure on commodity procurement departments. If the final product is discounted at retail, the base commodity must be purchased at a lower price in order to maintain profit margins. This characteristic was one that was discovered in pretest interviews and subsequently added to the questionnaire for the interviews with the companies.

A special promotion is expected to lead a food manufacturer to be involved in more advanced pricing activities. Two reasons for more advanced pricing: (1) to ensure that there is sufficient supply to produce the amount of final product needed to execute the special promotion; and (2) to protect the profit margin needed to make the promotion worthwhile.

Storage Requirements

Storage requirements refer to accommodations required for a commodity to be held in inventory before it is needed in manufacturing. An example of special requirements would be a commodity that requires refrigeration. Storage requirements are an important factor for a commodity procurement department because if these requirements cannot be met, the forward buying options for a commodity are eliminated.

It is expected that commodities with high storage requirements are less likely to be purchased with forward pricing activities (Kingsman 1985). This is expected for two reasons, both coming from Kingsman (1985). First, these storage requirements may not be able to be met, thus eliminating forward buy opportunities. Second, often these storage requirements are costly. These costs may eliminate any financial gains that could be made by implementing a forward pricing strategy and, thus, favor spot market transactions.

Storage Availability

Storage availability is the amount of space available to the food manufacturer for commodity storage; either company owned or rented space. A high degree of storage availability refers to a company with relatively more warehouse space available to store commodities than competitors.

The expectation is that in firms with relatively high storage availability, buyers are more likely to participate in forward buying activities, because they have ample space to store the procured commodity (Kingsman 1985). Moreover, food manufacturers with a relatively low amount of warehouse space are limited to pricing activities that do not require taking possession of the commodity, like spot markets and forward contracts. The other option is to rent storage space which adds to the cost and may eliminate gains from participating in a forward price strategy.

Market Efficiency

Market efficiency refers to the speed at which the commodity market reacts to new information. A market with a high degree of market efficiency reacts very quickly to new information in the marketplace, while a market with a low degree of market efficiency reacts more slowly to new information in the market. An example of a highly efficient market is number two yellow corn that is traded on the Chicago Board of Trade. The corn market reacts nearly instantaneously when new market information becomes available.

The expectation is that the more efficient a commodity market is the less forward buys will be implemented. This is because if the market is very efficient, it is much more of a challenge for a commodity procurement department to be able to figure out and in effect, beat a market. In efficient market by the time buyers have information, it is likely that the market has already reacted to the information. On the other hand, in relatively inefficient markets it is more likely that a commodity procurement department could be ahead of the market and execute a forward price strategy before the market reacts. These

expectations are based on information collected in pretest interviews with personnel in the commodity procurement profession.

Budget Constraints

Budget constraints, in the context of this study, refer to the limited budgets that commodity procurement departments face. A high budget constraint refers to a commodity procurement department that faces a limited budget for a certain time period.

In this case, firms are expected to be involved in fewer forward buys since they have high execution costs. Forward buys are expensive to execute in the short run because the food manufacturer has to pay for the commodity before it is needed for processing (Kingsman 1985). Where budget constraints are not critical the main priority is to be profitable, In this case, profit is measured against the price risk, without regard to any budget constraints.

Seasonality

Seasonality is the difference between price highs and lows across seasons historically. For example, for most commodities the lowest price season of the year is the time when the commodity is harvested and supply is at the highest level of the year. A high degree of seasonality means that there is very strong and predictable pattern for a commodity's prices. Many commodities are highly seasonal due to the growing patterns on the supply side (e.g. sweet corn in the Midwest) and often foods have peak and low seasonality in demand as well (e.g. turkey sales increase around Thanksgiving).

It is expected that firms that deal with highly seasonal commodities will be involved in more forward buys than firms that deal with low seasonality commodities. Food manufacturers are likely to try to take advantage of seasonality by buying large

volumes of commodities when seasonally prices are low and holding product in inventory (Kingsman 1985). Commodities may also be purchased ahead of time when seasonality indicates that a price increase is likely. This may occur when factors, such as drought or flood, are forecasted to affect harvest levels.

Traceability

Traceability refers to the ability of the food manufacturer to trace the source of a commodity that it uses in its food processing plant. This may also include information such as where a commodity was grown and how the commodity was grown (e.g. what herbicides were used on the field in which the corn was grown). A high degree of traceability refers to a commodity that can be completely traced back to its origins and where many details about the production environment of a commodity are known.

It is expected that firms dealing in commodities that require a high degree of traceability will be purchase via a forward contract. As traceability is integrated into a commodity, the transaction costs increase (Hobbs 1996). As Williamson (1975) indicates, when the transaction costs increase a firm will seek to move away from the cash market. The main reason for this is that commodities bought on the spot market do not have the attribute of traceability. These products are just commodities that met certain minimum requirements to be sufficient (e.g. number 2 yellow corn). These public standards are often inefficient for food manufacturers. For example, a food manufacturer may require a high quality corn for its final product and the public standard of number 2 yellow corn may not be a sufficient quality requirement. In this case, the food manufacturer prefers to have a traceable instrument in place to assure the quality required for their product.

Traceability is not important when a food manufacturer is indifferent to origin or method of production.

Common (Co-op) involvement

Common involvement refers to a situation where more than one entity is involved in the commodity procurement. The most common form of this is a farmer cooperative-owned plant buying products from its members. Common involvement can also be involved in cases where multiple food-manufacturers form a buying cooperative.

It is expected that commodities procured within the presence of common involvement will be more likely to be purchased through a forward buy. This is because nearly all of these cooperative involvements have some form of contract that commits the parties involved to a given quantity of a commodity (Royer 1995). The food manufacturer is likely to commit a future purchase and, thus, will want to hedge price risk via forward pricing.

Value of Commodity in Final Product

The value of the commodity in the final product examines the percentage of the cost of a final product that is the result of the raw commodity. A high value of the commodity in final product is expected to lead food manufacturers to be involved in forward pricing activities for that commodity. This is because a high percentage of the final price of the final product is the price of the raw commodity used to make it. Thus, a higher percentage of the final product price faces the risk of commodity markets.

If this percentage is high, a food manufacturer will be likely to seek to minimize this risk in order to ensure its margins (Hayenga 1979). Food manufacturers are also more likely to participate in forward pricing, so that they do not have to change the price

of their retail good, because consumers react negatively to price fluctuations at the retail level.

Service Level

Service level refers to service that a commodity provider has available to a food manufacturer. These services can range from market forecast to on-time delivery. The service level of a supplier was one of five characteristics that Monczka and Trent (1995) mentioned in their study as purchasing concerns by procurement departments. It is expected that commodities with a high service level are more likely to be purchased through forward pricing activities.

If there is a high service level, there is a good relationship between the two parties and more information is shared allowing for more forward pricing activities to be executed (Kingsman 1985). Another reason that this is a likely scenario is it may indicate a higher level of trust and cooperation between the two parties. Thus, the food manufacturers are more willing to listen to supplier ideas with respect to forward pricing opportunities. Also, the supplier is more likely to work closely with a food manufacturer and assist in activities (e.g. cost reduction programs) to ensure preferred supplier status.

Limited Availability of a Certain Quality of a Specific Commodity

A high degree of limited availability of a certain quality of a specific commodity refers to a situation where supply is limited. If there is a very limited supply of the quality of a certain commodity it is more likely a forward pricing activity will take place. The main reason for this is to minimize supply risk so that the manufacturing facility can keep running and the supply of the final product is not affected (Hayenga 1979).

A commodity is also more likely to be purchased via a forward price strategy if there is a limited supply of a certain quality historically. If supply gets very limited, it is very likely that the commodity price will increase and food manufacturers want to protect themselves against a possible large price increase.

The model that is being proposed for this research is presented in table 2. This figure summarizes the characteristics and the expected results that have been explained in the preceding chapter. This model will be tested by comparing these expected results against empirical results obtained via interviews with commodity procurement personnel at several food manufacturers. The following chapter will examine the empirical results from this study.

Chapter 3 Empirical Results

Chapter Overview

This chapter begins by briefly discussing the organization and the strategic role of commodity procurement departments that participated in this study. The bulk of this chapter discusses each characteristic and its affect on the chosen procurement strategy. This chapter will also discuss trends in commodity procurement.

Internal Organization

The three companies that participated in this study all had similarly organized commodity procurement departments. The basic structure was to have one overall manager or director of commodity purchases. Specific commodity group responsibilities were assigned to buyers that report to the manager or director. In one of the companies, there was a business support individual to assist each buyer.

All of the companies had buyers' responsibilities allocated by related commodities. For example, one buyer would have responsibility for all dairy commodities. Organizing responsibilities by related commodities allowed the buyer to specialize in one group of commodities and allow the food manufacturers to take advantage of the buyer's expertise area. The number of commodity buyers at each firm ranged from 3 to 12 for participants in this study. The commodities being purchased by food manufacturers were all food commodities ranging from corn to fresh vegetables.

Among study participants, the individual buyers generally made the final decision on how a commodity was procured. When a buy involved a large amount of money, it often required the approval of the manager or director. This was true for all study participants.

Strategic Role

There was very little consistency across the different companies as to the strategic role of the commodity procurement department. To illustrate, perceived strategic objectives included: control supply to manufacturing plant, minimize inventory, find new suppliers, assist marketing department, improve or maintain quality standards, assure traceability, reduce cost, serve as a profit center, provide service or value to customers (e.g. retailers), minimize risk, and take advantage of market opportunities in volatile markets. The strategic roles can be organized into three main categories: supply focused, profit focused, or customer focused.

Supply focused commodity procurement departments are focused on merely maintaining supply to the manufacturing facility. Profit focused commodity procurement departments examine potential profit opportunities in the market by making well-timed purchases. Service focused commodity procurement departments concentrate on providing value to their customers. An example of a service focused activity is a food manufacturer assisting a retail customer by jointly planning and implementing a special product promotion while ensuring supply to fulfill the additional demand.

Price Risk

All twelve participating buyers considered price risk to be a very important characteristic when determining how an agricultural commodity was procured (see table 3). This characteristic was a major part of the department's strategic role for the food manufacturers that consider the strategic role of the commodity procurement department to be a profit center.

In order for the commodity procurement department to take advantage of price fluctuations for a commodity for profit, the price of the commodity must be volatile. If the price is volatile, the commodity procurement department can purchase the commodity when the price is low and hold product until the time it is needed for manufacturing. If there were no price risk, there would be no need for a commodity buyer to buy in advance of manufacturing needs. As such, a spot market strategy is sufficient.

The majority of participants (10 of 12) in the study agreed that a high degree of price volatility would tend to move their company to a forward pricing strategy (see table 4). In cases where perishability was not a problem, the option of making a forward buy and taking possession of the commodity is available to the commodity buyers. This is an attractive option when the buyer recognizes that the price is at a very low level. The commodity can be immediately purchased and stored until it is used in processing.

If buyers indicated that high price variability did not lead to a forward pricing strategy, several explanations resulted. The most common was that with highly variable prices, buyers viewed that just as much, if not more risk existed, in taking a position in the market in an attempt to forward price. Buyers were concerned with minimizing their risk and they believed that using the cash market was the best way to achieve the goal of minimizing risk.

Volume

Only 7 of 12 participants considered the volume of the agricultural commodity when deciding a procurement strategy. When buyers considered volume, it was clear that a higher volume would encourage a forward buy. The main reason was to eliminate volume risk. Since high volume commodities are usually the core ingredients for the final

products, buyers do not want to risk running out. In other words, maintaining supply becomes the critical strategic role.

Several respondents indicated that buyers first concentrated on the larger volume commodities since these commodities potentially have the highest impact on profitability. In cases where profit is the strategic role of the commodity procurement department, buyers are more likely to develop a unique buying strategy for large volume purchases relative to commodities with smaller volumes.

The buyers that did not consider volume viewed all commodity purchases as profit opportunities. Therefore, these buyers considered the return to the investment more than just the volume. Also these buyers noted that the value of the commodity (volume multiplied by price) was more important than volume alone. While the high value tended to lead to forward buys, these buyers did not explicitly consider volume when making a procurement decision.

Perishability

All participants agreed that perishability must be considered when deciding on how to procure an agricultural commodity. While all agreed that perishability must be considered, the degree to which buyers considered it varied greatly depending on the commodities purchased. Many of the buyers dealt primarily with frozen products, so perishability was not a very large concern. On the other hand, buyers responsible for fresh products were very concerned with perishability.

A high degree of perishability eliminated most forward pricing alternatives, especially the forward buy options with storage. Rather the buyers preferred to implement forward contracts to insure supply and not have to store the commodity. In

many cases, buyers did not eliminate forward buys, but rather shortened the length of time that the forward price could be extended. All the buyers agreed that they were concerned about making too large a forward buy. The buyers were afraid the manufacturing plant would not use the commodity before it spoiled. This is a large concern because of the high cost of spoiled or wasted product, which entailed not just the cost of the commodity but also storage and disposal costs.

Sales Forecast Accuracy

All the buyers agreed that the accuracy of the sales forecast of the final product was very important to consider. With an accurate sales forecast, commodity buyers can be more aggressive regarding buying strategies in order to capture price swings because they know the exact volume of the commodity. When the volume is known with a significant amount of certainty, the buyer does not need to be as conservative with the buying strategy, as compared to buying a commodity where the sales forecast that is not very accurate. In other words, inaccurate sales forecasts increase risk to the buyer and discourage advanced options.

All participants agreed that commodities with high degrees of sales forecasts accuracy for the final product are more likely to be purchased via a forward pricing strategy. Accurate sales forecasts help in the timing of commodity buys since the buyer knows the quantity needed in each time period. Accurate sales forecasts are even more important for highly perishable commodities. Such commodities are already relatively risky because the commodity cannot be stored for an extended time period.

Special Promotions

Most of the commodity buyers in this study (9 of 12) indicated that special promotions play a role in their commodity procurement strategy. Special promotions are sales promotions that the food manufacturers are running in conjunction with retail customers. The manufacturer needs to work with the customer to determine the appropriate promotions and the procurement that needs to take place in order to fulfill the additional demand. If the special promotion is known far enough in advance, the buyer knows to increase the purchase volume of a commodity in time to take advantage of more advanced strategies. Sales forecast accuracy for the promoted commodity also plays a key role. Knowing the commodity purchase price needed to maintain the commodity's margin also helps the buyer make the promotion a profitable one.

Due to the reasons listed above, all buyers that considered special promotions in their procurement strategy agreed that having a special promotion increased the likelihood that a commodity would be procured via a forward pricing mechanism. The main reason for this is that the buyer wants to insure that enough volume is procured to maintain sufficient supply during the promotion. Also, as mentioned earlier, the buyer wants to achieve the targeted margin to make the promotion profitable. Buyers do not want to risk that the price of the commodity will increase between the time the promotion is proposed and the time the promotion is executed. If the price of the commodity were to increase it would threaten the profitability of the promotion.

Storage Requirements and Availability

Neither storage availability nor storage requirements were characteristics that were considered by very many of the participating buyers. Storage considerations entered

the procurement decision for most of the buyers as a cost. However, buyers usually considered this cost indirectly, since the buyers indicated that the cost was either built into their buying model or into their forecast. As such, the buyers did not need to focus specifically on storage costs. The amount of storage space available was not very important to most buyers because storage space is available for rent if needed.

Storage requirements were only considered by buyers who are procuring frozen or refrigerated goods. This was because the amount of frozen storage is often limited and expensive. In cases where frozen storage was considered, all buyers agreed they were more likely to use the spot market versus a forward buy in order to avoid the search costs of finding additional storage and the high monetary cost of leased storage.

Market Efficiency

Ten of 12 participating buyers said that they considered the efficiency of the commodity market when determining strategy. Market efficiency refers to the speed that the market reacts to new information. An efficient market reacts quicker than an inefficient market to new information.

The buyers indicated greater profit opportunities existed in markets that were relatively inefficient. In these cases, buyers believed they had a higher amount of information relative to other players in the market. With this additional information, there were more opportunities to forward buy commodities and reduce cost, thus improving profits. Food manufacturers often obtain this information when they are working closely with producers to receive up-to-date information on crop conditions and harvest predictions.

All the buyers that considered market efficiency indicated that they were more likely to make a forward buy in inefficient markets. This was due to the window of opportunity to improve profitability for commodities in inefficient commodity markets versus efficient commodity markets.

Budget Constraints

Budget constraints were only considered by 5 of 12 of the buyers interviewed for this study when deciding which procurement strategy to use. In most cases, buyers were more concerned with the risk required in order to get an expected return. If the return was adequate, then the budget constraint was not a concern.

When a budget constraint existed, buyers agreed forward pricing options were limited. Budget constraints often eliminated forward buy opportunities due to the high cost of purchasing a large quantity of a commodity in advance. When there is a very strict budget constraint, the spot market was more likely to be used. In this case, the company postpones the purchase as long as possible then uses the spot market to buy the commodity as close to the time of manufacturing as possible. This allows cash flow to be conserved and reduces the chance of purchasing larger quantities than needed.

Seasonality

All participants in this study considered seasonality when making procurement decisions. This is a logical response since seasonality directly affects the two main functions of the commodity procurement departments: maintaining a supply to the manufacturing plant and reducing cost.

Where the main strategic function of the commodity procurement department was maintaining supply, seasonality must be considered because many commodities have very seasonal supply. In these cases, the procurement department must understand seasonality and insure that enough of the commodity is purchased when it is available. This tends to lead to many forward buys, often involving contracts. When these forward buys are exercised, the supply of the commodities is assured for the entire manufacturing cycle. This is especially important in years when there is a poor crop for a given commodity.

Commodity procurement departments that focus on making a profit also consider seasonality. Buyers can buy more of a commodity when prices are low and not have to buy the commodity during periods of seasonally high prices by executing a forward buy. If this predictable rise and fall of prices is relatively consistent, buyers can take advantage of this profit opportunity.

Seasonality in demand may also contribute to profit. When a final product has seasonality in demand by consumers, there is a profit opportunity by procuring a commodity in advance of the peak demand time in order to capture the increase in sales volume and price of the final product during the peak demand time. A buyer can take advantage of these seasonal spikes in demand by insuring supply meets demand in the market.

All the buyers that participated in this study agreed that higher seasonality would result in more forward pricing opportunities being executed. Seasonality is a major factor that is considered in the timing of commodity procurement decisions. Due to the cyclical nature of many commodities, buyers that have expertise with a certain commodity are

able to time their purchases accordingly to take advantage of seasonal swings in volume availability and price.

Traceability

Traceability was a characteristic that was either very important or not important at all to commodity buyers. This is confirmed by the fact that only 3 of the 12 buyers participating in this study considered traceability, but those who did indicated that traceability was a very important characteristic of an agricultural commodity. The differentiating factor was the emphasis the company placed on insuring traceability in their final products.

The buyers that considered traceability as a very important characteristic were in firms where they emphasized the feature of traceability in their final product. The buyers that considered traceability agreed that when a high degree of traceability is required, forward purchasing mechanisms, specifically contracts are used. The main reason for this is to insure the desired quality and characteristics exist and the product origins can be traced throughout the supply system.

On the other hand, many buyers involved in this study do not currently consider traceability when making commodity procurement decisions. The primary reason behind this is that consumers of the final products do not demand traceability. Traceability does not provide a specific competitive advantage in the marketplace. As such, existing quality provided by the spot market is sufficient.

Common (Co-op) Involvement

Only 1 of 12 buyers that participated in this study used cooperative involvement to procure any of their agricultural commodities. Some of the buyers mentioned that they had attempted to participate in cooperative buying agreements, but those attempts were not successful.

The buyer that did have cooperative involvement indicated that all procurement is done via forward contract. The food manufacturer commits to buying a certain quantity and quality at the beginning of the growing season. The buyer then purchased the commodity at harvest time and stored this one buy for an entire year of manufacturing needs.

The primary reason behind the failure to use cooperative buys was the high cost of coordination and developing a common buying plan. In essence, the transaction costs were too high to make the cooperative buying activity a profitable option. These transaction cost include philosophical differences regarding how the commodity should be procured. This ultimately made cooperative involvement a non-viable option for the food manufacturers participating in this study.

Value of Commodity in Final Product

A characteristic that was not considered by very many buyers was the value of the commodity in the final product. Only 2 of 12 buyers participating in this study consider this characteristic. The primary reason for not considering this characteristic was that it was not the buyer's concern; rather the buyer's concern was procuring the correct volume of the commodity at the lowest possible cost to the company. How the commodity was used in manufacturing was not a responsibility for the buyers.

When the value of the commodity in the final product was considered the buyers agreed that the higher the value of the commodity in the final good, the more likely a forward price option would be used. The primary focus in these situations was to maintain supply and pricing options reduced risks associated with supply.

Supplier Service

Service provided by the supplier was one of the most interesting characteristics in the study. All the buyers interviewed agreed that they considered this factor. In fact, they all mentioned that a supplier must provide the services the food manufacturer demands in order for them to buy commodities from a supplier.

Some of the services that the buyers expected are maintaining supply, on time delivery, knowledge of the market and the buyer's firm, cooperation, and market opinions. While all the buyers indicated that they expected a high level of service, none said it would have an effect on the strategy used to procure a commodity. Basically the service was expected for a supplier to do business with the food manufacturer.

Limited Supply of Specific Quality

Having a limited supply of a certain quality was only considered by 3 of 12 buyers in this study. The main reason for this was most commodities had to meet standards to be marketed as a commodity. The buyers assumed that all the commodities being marketed met the same quality standards. In this case, the supply is only limited by the quantity of the commodity that is available on the market.

While not very many of the buyers considered limited supply of a given quality, the buyers that did indicated that it was a very important characteristic. Buyers also

indicated that they were more likely to forward buy a commodity if they feared there was a limited supply of the quality needed. The predominant reason why the buyers executed forward buys was to insure a quality level above the general commodity. This resulted in a competitive advantage in the marketplace for the final product, thus, maintaining supply was crucial.

Description of Tables and Figures

Table 3 depicts the number of survey respondents that considered each characteristic. When buyer took a characteristic directly into consideration that is the only way it was reported in this figure. This figure does not indicate if the buyers used the characteristic in the manner expected in the research.

Table 4 only considers the respondents that considered a characteristic. The number reported in this figure corresponds to the number of the buyers who considered a characteristic agreed that it was more likely to lead them to the procurement strategy indicated by the model proposed for this research.

Summary of Strategies Implemented

The spot market was still the most widely used procurement strategy. The main reason for this is that the spot market is the only means in which many commodities can be procured. For many commodities there is no functioning futures market.

Forward buys were used the second most often. The main reason for this was many commodities were purchased via a forward contract. The forward contract obligates a supplier to deliver a given quantity of a commodity to the food manufacturer on an agreed upon date. In some cases quantity and date were the only specification in a

contract, but other contracts had many more details. Examples of other details included in a forward contract were price, quality specification, and traceable records.

Chapter Summary

This chapter discussed several aspects of commodity procurement, including the strategic role of the commodity procurement department and trends in agricultural commodity procurement. This chapter also has analyzed different characteristics that commodity buyers consider when making procurement decisions. Many of these characteristics followed the hypothesized affect on procurement strategies. For example, the more perishable a commodity is the more likely a food manufacturer will procure the commodity via a forward buy, usually a forward contract. There were other characteristics that were hypothesized to be important in the procurement strategy decision that were found in this empirical study to not be important, like storage availability.

Chapter 4 Conclusions

Chapter Overview

This chapter will begin with a discussion of the results from the interviews. The first section will discuss the role that the philosophy of the company plays in making procurement decisions. This chapter will then proceed to discuss the three strategic roles of commodity procurement departments: maintaining supply, profitability, and service. Next the conceptual and managerial conclusions are discussed. Finally, the research limitations and future research opportunities are discussed.

Discussion of Results

The primary reason that buyers tended to use one strategy versus another tended to revert back to what the strategic role of the commodity procurement department was. When a buyer was considering what procurement strategy to use they would evaluate the characteristics were important for that commodity. The buyer then decides what procurement strategy worked best to fulfill the strategic role that commodity procurement is supposed to play, while considering the key characteristics for a commodity.

The strategy by which buyers procure commodities is driven to fulfill one of three strategic roles of the commodity procurement department. The first role is to maintain supply of commodities. The second is to make commodity procurement profitable. Finally, the third reason is to provide services that the food manufacturer's customers demand. All of these strategic roles must also be inline with the philosophy of the company. The buyer will decide among the procurement strategies of spot buy and forward buy to best fulfill the strategic role that is expected from the commodity procurement department for the food manufacturer.

Company philosophy

A food manufacturer must decide what role its commodity procurement department should play: supply, profit, or service. As margins in the food industry continue to shrink, food manufacturers may very well look to their commodity procurement departments to help increase or maintain profitability. However, to attempt to improve the profitability of commodity procurement departments, food manufacturers must be willing to allow the commodity procurement departments to take more price risk. For some food manufacturers, this will be a viable alternative. Others will continue to seek alternative means to reduce cost.

Food manufacturers often consider different characteristics or market conditions when making commodity procurement decisions. In this study, the primary underlying factor for these decisions was the role the commodity procurement department plays within corporate strategy. The influence of other factors was consistent with this role and corporate philosophy.

The best example of the commodity procurement department being guided by the company's philosophy occurred regarding commodity traceability. Companies that place a high emphasis on traceability often incorporate these responsibilities to the commodity procurement department. These companies often require full traceability for a supplier to supply to them. The commodity procurement department must follow through with this company strategy by requiring this when procuring a commodity. At the same time, companies that do not place emphasis on traceability do not have this as part of the strategic role of the commodity procurement department. Thus, a commodity buyer does

not have to consider this when making a procurement decision. The philosophy of the company regarding traceability drove the procurement strategy.

Role of Commodity Procurement Departments

Evaluating the results from this study it became apparent that many of commodity procurement decisions were a direct result of the strategic role of the commodity procurement department within the food manufacturer. Commodity procurement departments appear to follow a value adding path respect to their strategic focus. The first role of a commodity procurement department is to maintain supply. This is insuring that manufacturing demands are met for each commodity in order to keep manufacturing on schedule.

Once maintaining supply is achieved and commodity procurement is efficient at maintaining supply, then the commodity procurement department can look to add more value to their company by making a profit on commodities by taking advantage of market profit opportunities. When a commodity procurement department becomes very efficient at maintaining supply they may not look to become profitable. This is dependent on what strategic role the company intends the commodity procurement department to fulfill. For example, if the food manufacturer strategically plans on making high profits on the final product by marketing strategies, the company may very well want the strategic role of the commodity procurement department to just focus on maintaining supply. In other cases, a commodity procurement department could add value to their company by seeking profit opportunities in the market. It makes no sense for a commodity procurement department to look at having a profit focus if they are not efficient at maintaining supply.

Once a commodity procurement department has become very efficient at being profitable, the commodity procurement department can look to add value to the company by providing service to the food manufacturer's customer. If a commodity procurement department is able to provide additional services to their customer, the commodity procurement department then adds more value to the entire company. By providing these additional services the commodity procurement department is building working relationships and in many cases insuring a level of sales. This is because many of the services provided, like planning a retail promotion, involve the food manufacturer increases the value of final food products they sell. The commodity procurement department must insure that they can meet the demands to provide these services and that providing these services is profitable for the food manufacturer.

Each of these roles will be discussed in the following section. This value adding path is visually presented in figure 2. This research proposes that a commodity procurement department must first be efficient at the lowest level of the triangle before it proceeds to the next higher level. A commodity procurement department can provide increases value to the competitive nature of the firm as they move up the triangle.

Maintaining supply

In order to maintain supply, the commodity procurement department must reduce the risk of stocking out to essentially zero. There are many ways to manage this task and commodity procurement personnel will continue to find more innovative and cost saving ways of protecting supply. As an example, the research showed insuring sufficient volume to fulfill manufacturing demands was the buyer's first concern. Often, without the correct volume, even with a lower price, a potential supplier was not considered.

A popular means of obtaining this goal is to have contracts to insure supply. These contracts in some cases set the price when signed, while others included some type of formula that tied the price of the commodity to the market price of that commodity at the time of delivery. The formula contracts allow commodity buyers to insure their supply while also developing buying strategies that can be profitable for their companies.

Profitability

In order for a commodity procurement to be profitable, it must do more than just eliminate supply shortages. Commodities, by their nature, do not generally follow stable prices. Thus, there is inherent price risk in commodity procurement. A commodity buyer must design a plan to increase profitability without increasing the price or supply risk. Buyers must develop a risk-reward tradeoff to determine how much price risk they are willing to take in order to achieve expected profits. In most cases, it is nearly impossible to consistently buy a commodity at the lowest market price and likewise to consistently avoid buying when the market is at its highest.

The risk-return question is often answered by the nature of strategic role of commodity procurement department within a food manufacturer. If the primary strategic role of commodity procurement department were to be a profit center, buyers would be more likely to take additional price risk to try to maximize profit opportunities in the market. On the other hand, if the strategic role of a commodity procurement department were to reduce risk (both supply and/or price) buyers would be much less likely to seek maximum returns on a commodity purchase. Buyers are willing to trade a higher price for the security of not having to take the risk of higher price volatility.

An example of this tradeoff occurs when buyers are evaluating the price risk of the commodity. If there is price risk involved, there is also a great opportunity to reduce cost to the food manufacturer. When this occurs commodity buyers must develop buying strategies that take advantage of low price opportunities in the market while reducing cost.

Service

The role of providing service is the highest level that commodity procurement departments can ascend to. This service role is providing the food manufacturers' customers with more services than just being a supplier to them. In order to implement additional services to customers, food manufacturer's commodity procurement departments must first be efficient in maintaining supply and being profitable. If a commodity procurement department cannot fulfill the strategic roles of supply maintenance and being profitable, then is it unlikely they can successfully provide additional services for their customers, while maintaining profitability.

An example that is demonstrated in this research is when food manufacturers work with their retail customers on special promotions. Representatives from the food manufacturer, including a commodity procurement buyer, help the retailer design and implement the promotion. The role of the commodity procurement representative is to insure that the increased quantity demanded could be obtained and that the commodity can be procured at a price that allows the promotion to be profitable for the food manufacturer.

Conceptual Conclusions

This study has contributed to the literature on commodity procurement by empirically evaluating the main characteristics that are considered in procurement decisions. There is a large literature on commodity selling, but very little on commodity procurement. This study has contributed an empirical study on the procurement of commodities. This case study approach can be expanded in future research by adding quantitative research applications to similar procurement considerations. This research has also supplied the literature with an empirical study showing what factors that previous literature indicated affect commodity procurement decisions are actually used by commodity procurement departments. Some of the factors that literature suggested are important in procurement decisions were very important empirically. There were other factors that literature indicated were important in procurement decisions that the importance of these factors varied greatly across this study.

This research also provided an empirical study indicating to what extent these factors identified by previous literature played in commodity procurement decisions. The results varied greatly across the different factors as to their importance in procurement decisions.

There seems to be a changing of the role of commodity procurement departments. This research proposes the following model. This model can be seen visually in figure 2. This model implies a commodity procurement department must first maintain supply. Only once the commodity procurement department has mastered maintaining supply, then the commodity procurement department can progress to being profit focused. Once the commodity procurement department has become efficient at being profitable, then

they commodity procurement department can successfully offer additional services to the food manufacturer's customers.

This study has provided an empirical evaluation of the procurement strategies used in purchasing commodity. This study has also provided an empirical study evaluating the main characteristics that affect the decision on which procurement strategy is used when procuring commodities. Finally, this study has provided the literature with a model of the adding value of the strategic roles of the commodity procurement departments. Food manufacturers can use this model to evaluate their commodity procurement departments and academia can evaluate this model in further research on commodity procurement.

Managerial Conclusions

Food manufacturers need to evaluate their commodity procurement departments and determine what strategic role they need to play. Managers need to consider what additional value their commodity procurement departments can add to their companies. This can come in several forms including improving profitability and providing greater service to their consumers.

First, commodity managers must understand the strategic role the commodity procurement department plays in their company. This must be understood so that procurement strategies are in line with the company's philosophy. The strategic role must also be understood to insure that the commodity procurement department is fulfilling the necessary strategic role within the company.

Commodity procurement departments must understand what the expectations are within their company and each buyer must understand what is expected of them. Once

expectations are understood, buyers need to determine what procurement strategies can be implemented to best meet these expectations. This can be accomplished by evaluating which characteristics are the driving force behind each commodity that they are buying. Once this is determined, then the buyer needs to determine what strategy is the best for that commodity. While doing this the buyer must remember what the strategic role of commodity procurement is suppose to play in their company and comply with this strategic role.

The commodity manager must determine where they are located on the triangle of roles of commodity procurement departments. Once this has been determined, the commodity manager needs to assess how efficient the department is performing at the current level. The commodity manager then needs to decide if the department can move up one level on the triangle of roles that commodity procurement departments play. If it is determined that the department can move up one level, then a plan on how this can be accomplished should be developed and implemented.

Research Limitations

There are several drawbacks to the case study method used in this study. The most obvious is that in a qualitative study there is no quantitative data to compare to existing research for validation purposes. While this is a drawback, it was not the intent of this study to develop such quantitative results. Rather, the focus of this study was to better understand the “what” and “why” of commodity procurement since so little info exist regarding this activity.

Another limitation of this study is that the sample size was small. As such, it is unclear if results can be generalized to larger populations. Furthermore, this sample

focused on food manufacturers. It is unclear if results can be generalized to other types of manufacturers.

There are also many criticisms of case studies, not the least of which is that case studies are not rigorous enough and that they are biased. Yin (1989) states these perceptions are based on past research that has been done sloppily and that researchers allowed equivocal evidence to drive their research finding and conclusions. To combat this, Yin's (1989) Case Study Protocol was followed. Following this protocol insured that valid research results were obtained.

Future Research

The first extension of the research that can be applied is to extend this study to include more food manufacturers. This would eliminate the drawbacks associated with a small sample size. This could also provide more insight in commodity procurement for food manufacturers.

A research approach that is quantitative should also be completed in the area of commodity procurement. With this study being strictly qualitative, one of the drawbacks is there are many restrictions to what can be reported. As an example, this form of study does not allow for econometric evaluation of commodity procurement decisions. A quantitative study of commodity procurement would allow evaluation into what factors are highly correlated with making a certain procurement decision. This could be accomplished by surveying food manufacturer's commodity procurement department to determine what characteristics the buyers consider when making a procurement decision. These results can be run through a regression to get some quantitative results

This form of study also does not allow for evaluation of different size commodity groups and different dollar values across commodities. Examining food manufacturer's procurement decisions and evaluating these decisions relative to the amount spent on each buy is one example. This would provide "rules of thumb" concerning the risk-return trade-off that must be evaluated and could provide some answers regarding when it is worth developing an advanced buying strategies for. It could also look at issues such historical volatility and how much price risk there must be historically in order to develop an advanced buying strategy.

Another perspective that would add a great deal to this area would be to examine the impact that decisions at the retail level have on commodity procurement personnel. A suggestion by one of the professionals that was interviewed was to perform a game theory study on retail promotions within a commodity group and trace the buying patterns from that commodity to evaluate how the promotion changed the procurement of that commodity. Since retail sales ultimately drive food manufacturers and, thus, the commodities procured by the food manufacturers, this type of study makes a great deal of sense empirically. There are many other ways that the relationship between retailers and food manufacturers could be evaluated.

Another possibility for future research is to test the Adding Value Model of the role of commodity procurement developed in this study. Research could be performed to confirm that the triangle presented in this study is accurate and to evaluate what factors encourage or discourage movement to higher strategic roles. Future research could also add additional layers to the triangle, if applicable.

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Table 1: Characteristics of Agricultural Commodities

Price Risk
Volume
Perishability
Accuracy of Sales Forecast
Special Promotions
Storage Requirements
Storage Availability
Market Efficiency
Budget Constraints
Seasonality
Traceability
Common Involvement (Coop)
Value of Commodity in Final Product
Supplier Service
Limited Supply of Specified Quality

Table 2: Matrix of Expectations

Characteristic	Spot Market	Forward Buy
Price Risk	low	high
Volume	low	high
Perishability	low	high
Accuracy of Sales Forecast	low	high
Special Promotions	low	high
Storage Requirements	high	low
Storage Availability	low	high
Market Efficiency	high	low
Budget Constraints	high	low
Seasonality	low	high
Traceability	low	high
Common Involvement (Coop)	low	high
Value of Commodity in Final Product	low	high
Supplier Service	low	high
Limited Supply of Specified Quality	low	high

The high or low in each cell represents the level of the characteristic.

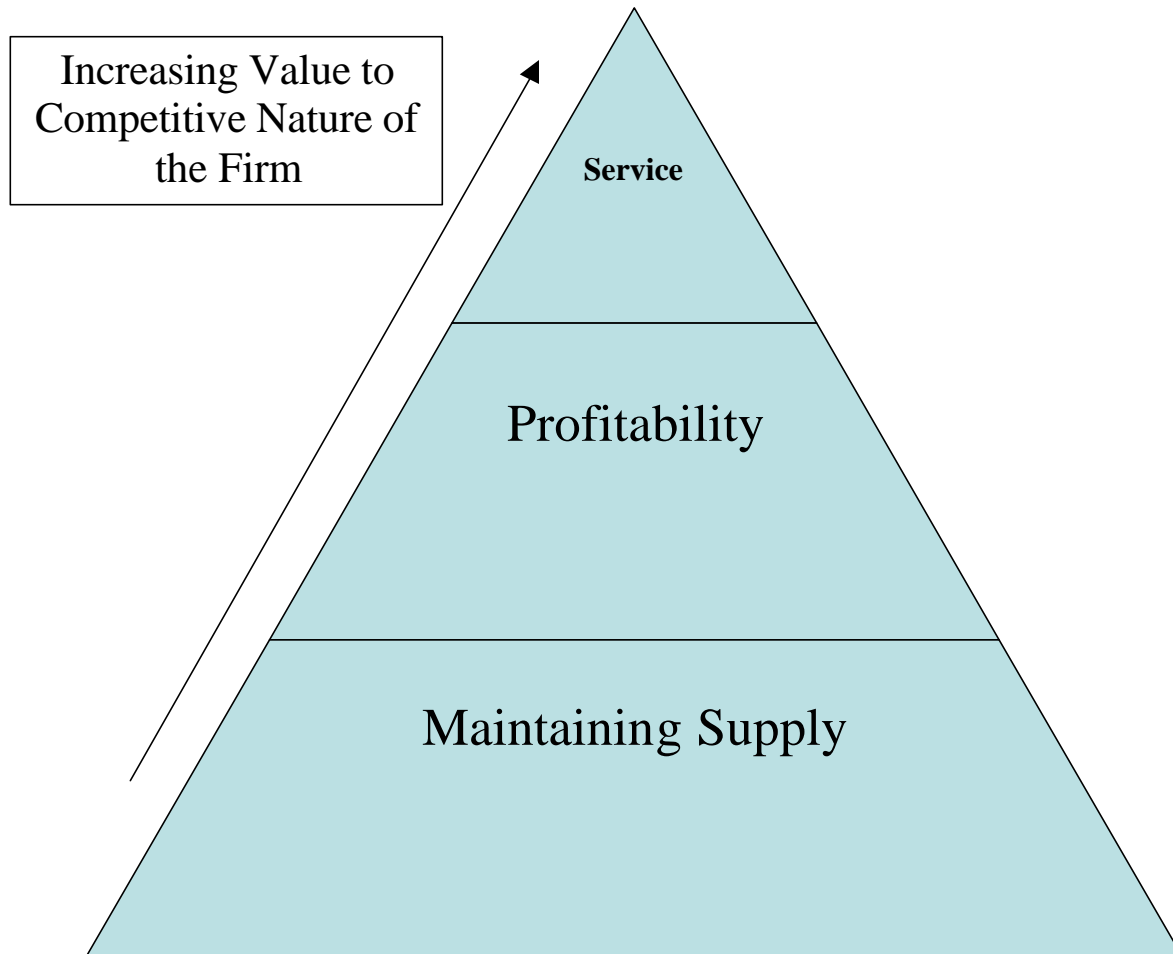
Table 3: Buyer Consideration

<i>Characteristic</i>	<i>Considered</i>
Price Risk	12 of 12
Volume	7 of 12
Perishability	12 of 12
Accuracy of Sales Forecast	12 of 12
Special Promotions	9 of 12
Storage Requirements	3 of 12
Storage Availability	0 of 12
Market Efficiency	10 of 12
Budget Constraints	5 of 12
Seasonality	12 of 12
Traceability	3 of 12
Common Involvement (Coop)	1 of 12
Value of Commodity in Final Product	2 of 12
Supplier Service	12 of 12
Limited Supply of Specified Quality	3 of 12

Table 4: Number of Buyers in Agreement with Hypothesized Outcome

Characteristic	Agreement with Hypothesis
Price Risk	10 of 12
Volume	7 of 7
Perishability	12 of 12
Accuracy of Sales Forecast	12 of 12
Special Promotions	9 of 9
Storage Requirements	3 of 3
Storage Availability	0 of 0
Market Efficiency	10 of 10
Budget Constraints	5 of 5
Seasonality	12 of 12
Traceability	3 of 3
Common Involvement (Coop)	1 of 1
Value of Commodity in Final Product	2 of 2
Supplier Service	0 of 12
Limited Supply of Specified Quality	3 of 3

Figure 2: Value Roles of Commodity Procurement Departments



Appendix 1. Questionnaire

1. Could you please provide me with some background on your company's procurement structure and its relationship to overall company structure?
2. Describe how your commodity procurement group is organized and how buying responsibilities are assigned.
3. What strategic role does commodity procurement play with your company?
4. Is the trend within your company to have more or less commodity buyers? Why?
5. Are the buyers organized by specific commodity groups or more decentralized across various commodities?
6. What are the different commodity buying strategies that you use?
7. Who decides what commodity buying strategy is used?
8. What determines what commodity buying strategy is used? Why?
9. How have these commodity strategies changed in the last 5 years? Why?
10. What advantages/disadvantages have you seen with these changes?
11. How do you see commodity buying strategies changing in the next 5 years? Why?
12. What do you see as the potential advantages/disadvantages of these future changes?
13. What materials are you using to train employees on different buying strategies?
14. How is price risk involved in a procurement decision?
15. If price risk is high what type of strategy does this generally lead to?
16. How is volume of commodity purchased involved in a procurement decision?
17. If volume of commodity purchased is high what type of strategy does this generally lead to?
18. How is commodity perishability involved in a procurement decision?
19. If perishability is high what type of strategy does this generally lead to?
20. How is the accuracy of sales forecast involved in a procurement decision?
21. If there is a high degree of accuracy of sales forecast what type of strategy does this generally lead to?
22. How do special promotions become involved in a procurement decision?
23. If there is a large special promotion ahead what type of strategy does this generally lead to?
24. How does the amount of space required for storage of a commodity involved in a procurement decision?
25. If the storage requirements are high what type of strategy does this generally lead to?
26. How does the amount of space available for storage of a commodity involved in a procurement decision?
27. If the storage availability is high what type of strategy does this generally lead to?
28. How does the cost storage of a commodity involved in a procurement decision?
29. If the storage costs are high what type of strategy does this generally lead to?
30. How does the efficiency of the market of a commodity involved in a procurement decision?
31. If the price discovery mechanism for a commodity is highly developed what type of strategy does this generally lead to?
32. How is a budget constraint involved in a procurement decision?

33. If there is a tight budget constraint what type of strategy does this generally lead to?
34. How does seasonality of a commodity involved in a procurement decision?
35. If the seasonality is high what type of strategy does this generally lead to?
36. How does traceability of a commodity involved in a procurement decision?
37. If the traceability is high what type of strategy does this generally lead to?
38. How is cooperative involvement involved in a procurement decision?
39. If the cooperative involvement is high what type of strategy does this generally lead to?
40. How does the value of the commodity in the final good involved in a procurement decision?
41. If the value of the commodity is high in the final product what type of strategy does this generally lead to?
42. How is the service level of the commodity supplier involved in a procurement decision?
43. What types of services do you expect from your suppliers?
44. If the service level from the supplier is high what type of strategy does this generally lead to?
45. How are quality specifications of a commodity involved in a procurement decision?
46. If there is a very limited supply of specific quality of a commodity what type of strategy does this generally lead to?
47. Are there any other major factors that you consider when making commodity procurement decisions?